



## Interest Rate Risk in the Banking Book

Welcome to FIG in Focus, a collection of insight pieces focusing on the Financial Institutions Group World from **Adeva Partners**.



In this edition, we will cover Interest Rate Risk in the Banking Book, specifically:

- Adapting to the “new (old!) normal”
- 2022: Inflation and Rising Global Interest Rates
- Effect on Bank Probability
- Effect on Capital
- Regulatory Impact

### Interest Rate Risk in the Banking Book: Adapting to the “new (old!) normal”

2022 started to see the end of the ultra-low interest rate environment we enjoyed since the 2008 banking crisis.

This should be good news for banks that have suffered reduced returns and depressed equity prices for a decade or more as a result.

In this article, we explore whether banks published interest rate sensitivities are likely to match the actuality of rising rates, and whether the benefit of rising rates on the profit and loss account may be offset by capital impacts arising from losses in the securities holdings which are only reflected in OCI. Finally, we consider how banking supervisors are incorporating the new interest rate environment into stress testing regimes.

# Interest Rate Risk in the Banking Book

## *Executive Summary*

- The Covid-19 pandemic and the Russia-Ukraine war have set in train significant inflation in major economies which in turn have triggered the largest interest rate rises for a generation.
- A steeply rising yield curve would normally be expected to be most positive for banks earnings and capital, however the structure of a bank's balance sheet is often a more important determinant of its sensitivity to interest rates, particularly in light of the negative impact rising rates have on securities holdings.
- Sensitivity modelling is increasingly standardised around the Basel Committee interest rate risk in the banking book framework scenarios. However, real world interest rate changes rarely (if ever) conform to standardised scenarios. Recent interest rate rises in the USA and Brazil demonstrate that actual rate changes may be hybrids of one or more scenarios, and therefore costs or benefits to margins may be challenging to quantify.
- Interest rate rises may represent a double-edged sword for banks. Fixed income portfolios held for liquidity and accounted at fair value through other comprehensive income, and cashflow hedges in place against previously falling rates may negatively impact common equity tier one capital. These negative effects of rising rates may be great enough to offset the positive effects of rising net interest margins.
- IRRBB is closely related to other market risks impacting the banking book. Credit spread risk in the banking book (CRSBB) may impact banks liquidity portfolios where volatility impacts government bond spreads. For certain banks reporting in US dollars with significant overseas subsidiaries, the rise in US interest rates and resultant strengthening of the US Dollar may have a material negative impact on equity due to structural FX risk.
- Given the potential for rising rates to erode capital through FVOCI and cashflow hedging reserves, regulators are increasingly focused upon IRRBB as part of stress testing regimes. Although European banks are expected to perform well under current envisaged scenarios, recent changes to the European Banking Authority's stress testing methodology will potentially expose banks to much more stressful negative interest rate scenarios in future stress tests.

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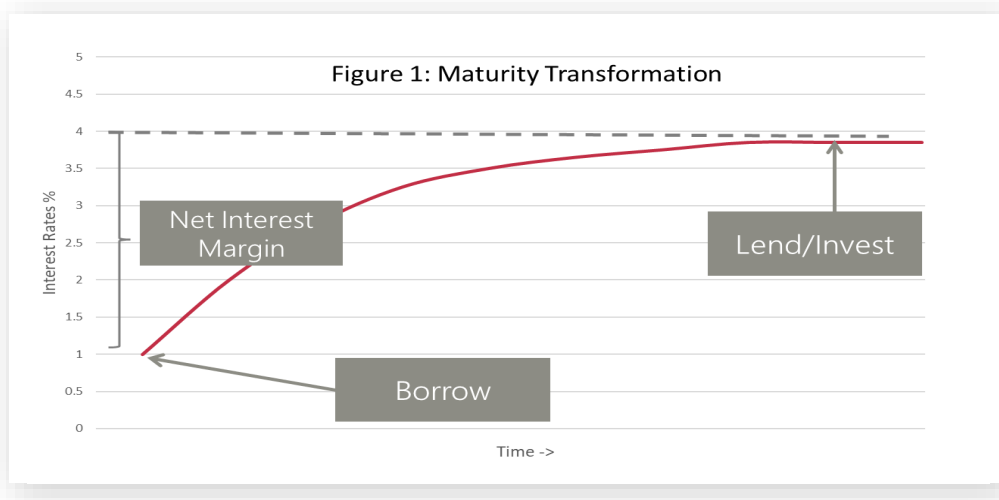
## 2022: Inflation and Rising Global Interest Rates

Monetary easing to fund government responses to covid-19 measures, supply issues arising at the end of the pandemic and the Russia-Ukraine War's impact on global commodity prices have all played a part in increasing inflation rates in major economies, particularly in Europe and the Americas, where inflation at the time of writing is close to double digits. The orthodox response of central banks throughout the world has been to reduce quantitative easing (where employed) and to increase reference interest rates:

	Central Bank Reference Rate Q4 2021	Central Bank Reference Rate Q4 2022	Increase
UNITED STATES	0.25%	4.50%	+4.25%
EUROZONE	0.00%	2.50%	+2.50%
UNITED KINGDOM	0.10%	3.50%	+3.40%
INDIA	4.00%	6.25%	+2.25%
BRAZIL	2.00%	13.75%	+11.75%

## Effect on Bank Profitability

Commercial and retail bank business models classically depend upon the ability to profitably intermediate between short and long term rates. In theory the greater the difference between the rates at which the bank can lend and borrow (usually via deposits), the greater the net interest margin (see figure 1).



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We should therefore expect that a steepening yield curve (see *Basel Interest Rate Sensitivities Disclosure*) e.g. from raising long-term rates should cause margins to increase, and either falling long-term rates or increasing short-term rates should decrease net interest margins.

However, Citigroup's 2021 interest rate sensitivity disclosures (figure 2) shows that this is not always the case:

Figure 2: Citigroup Net Interest Margin Sensitivity Year end 2021	Parallel Up	Short-Up	Steepener	Flattener	Parallel Down
Short term rates (basis points,)	+100	+100	0	0	-100
Long-term rates (basis points)	+100	0	+100	-100	-100
Net Interest Margin Sensitivity (Impact on Year 1 Profits) (\$millions)	+1,175	+1,302	+127	-285	-1,123

Source Citigroup 2021 10-k report page 102

## Basel Interest Rate Sensitivities Disclosure

The sensitivity bank margins (and ultimately capital) from interest rate movements has historically been an area of inconsistent disclosure amongst banks.

In 2016 the Basel Committee of Bank Supervisors (BCBS) introduced a framework for Interest Rate Risk in the Banking Book (IRRBB) management, which introduced a requirement to disclose the impact of six stress tests on a bank's interest margins and capital to be disclosed annually in its Pillar 3 report.

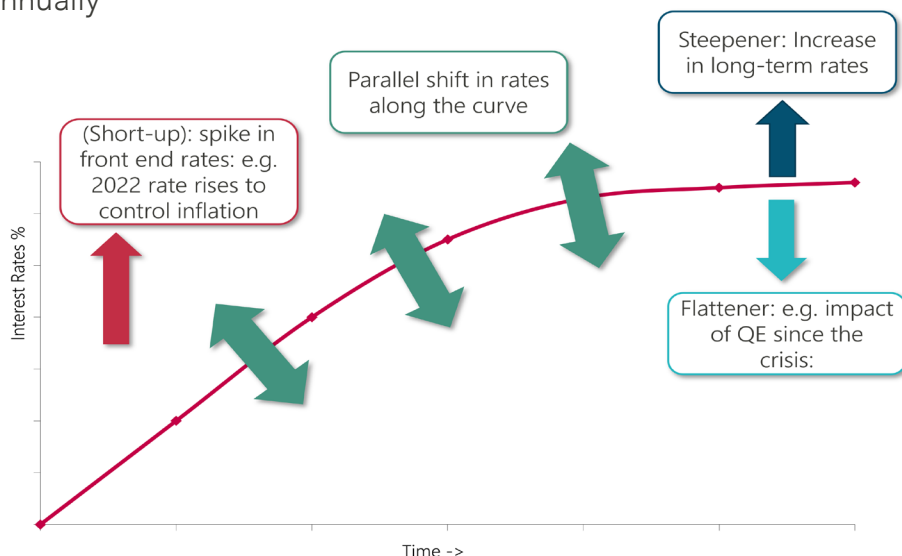


Figure 3: Basel Interest Risk in the Banking Book Stress Tests

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## Effect on Capital

Raising rates have generally been positive for bank net interest margins, the effect on capital is very often the opposite, as the impact is through other comprehensive income. The two main potential threats to capital come from:

1. Falls in the value of positive duration securities held for liquidity in fair value through other income (FVOCI) portfolios negatively impacting FVOCI reserves.
2. The fair value of cashflow hedges, often implemented to hedge floating rate assets against previously falling rate scenarios, impacting cashflow hedging reserves.

Standard and Poors in its July 2022 banking outlook<sup>1</sup> estimated that from a sample of 70 European Banks, over three quarters would benefit from rising net interest margins in a +200 basis point scenario, but a similar number were expected to see a negative impact to the economic value of equity (EVE) due to the factors outlined above. The median decrease in EVE was around 5% for these banks, although the one-year impact on equity would be much smaller.

For US Banks the impact could be even greater. At the end of 2021 Citigroup disclosed a sensitivity of US\$ 2.9 billion negative impact to OCI (1.5% of equity) for the first 100 basis points of the “short-up” scenario.

As most of the assets impacted by rising rates are likely to be government debt securities, it is also important to mention the potential impact of [Credit Spread Risk in the Banking Book \(CSRBB\)](#) upon capital. High government debt levels post covid and rising interest rates could impact the ability of governments to continue to service debt, especially in an economic downturn when raising tax revenues could be politically difficult. This could be reflected an increasing credit spread on top of rising interest rates in government bond yields and thus cause further losses impacting FVOCI reserves.

However, as government bonds are generally taken to represent the “risk free rate” in a particular currency, measuring the CSRBB can be problematic. As a proxy for default risk we have taken credit default swap spreads (Figure 6).

Figure 6: CDS Spreads 2021-22 (Selected Countries)	USA	UK	ITALY	BRAZIL
5 Year CDS Spread 31 <sup>st</sup> Dec 2021	13	5	90	227
5 Year CDS Spread 31 <sup>st</sup> Dec 2022	36	7	132	234
Increase/(Decrease) In 2022	+22	+2	+42	+7
CDS Spread % of 5 Year Treasury Yield at 31 <sup>st</sup> Dec 2022	9%	2%	35%	18%

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There is some suggestion from this relationship that higher interest rates will increase the level of CDS spreads, particularly where a high debt to GDP ratio is also present, although obviously a host of other economic, financial, and political factors will also influence this.

In addition to these risks the sharp rises in US\$ rates have also contributed to a significant appreciation of the US\$ versus other major currencies. For banks reporting in US\$, but with significant overseas subsidiaries resulting in **structural FX risk**, this can lead to a material devaluation in foreign exchange revaluation reserves. For certain banks we estimate that this could be an additional 2-3% of capital based on 2021 year-end disclosed FX sensitivities.

## Regulatory Impact

The adoption of the Basel interest rate sensitivities disclosure (see above) brings more standardisation and transparency to an area of risk management which, despite its importance, has been relatively opaque until now. There also appears to be an increasing degree of prominence given to IRRBB management as part of supervisory stress testing regimes.

The years of ultra-low interest rates were a slow strangulation of bank margins which were able to be partially mitigated by maintaining administered rates where possible and keeping deposit rates at zero (and very occasionally below). The threat to bank capital adequacy from a supervisory perspective was therefore also gradual, through reduced net income, in turn able to be partially mitigated by lower shareholder distributions and reduced balance sheet growth. The new environment of rising rates as outlined in the previous section is more immediate as it is expected to be driven by FV falls.

In a December 2022 study<sup>2</sup> the ECB evaluated two plausible paths for future Euro interest rates, including a +300 basis point rising and flattening rate environment (similar as that observed in the USA). The ECB stated that they expected that the 89 banks under their supervision would generally perform robustly in such a scenario, although the lowest decile of banks would suffer falls of up to 0.8% CET1.

The increasing importance of IRRBB in supervisory stress tests was also highlighted by a change to the European Banking Authority's 2023 stress testing methodology. Previously, stress scenarios were floored based on a minimum ECB repo rate of -1%. From the 2023 stress test the EBA will remove the floor, potentially exposing banks to much higher IRRBB stresses in severely adverse economic scenarios<sup>3</sup>. This goes further than both the US Federal Reserve and the UK's Bank of England who have both previously only required modelling of near zero central bank rates and marginally negative (money market) rates.



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Given the direction of travel of Eurozone rates, and the likely macroeconomic scenarios that the ECB will set for the 2023 stress test, this policy change may not have an immediate impact. However, once rates start to fall, the sensitivity of bank stress test results to interest rate scenarios could be much more sensitive.

In this article we explored the challenges of assessing interest rate risk in the banking market.

*Adeva Partners has seen increased interest in our Interest Rate Risk in the Banking Book training both amongst treasury departments of banks and regulators. The current environment highlights how important it is to help banks fully understand how this important risk can impact even the most conservative of balance sheets.*

## Sources

<sup>1</sup> Standard and Poors Global banking Outlook July 2022

<sup>2</sup> European Central Bank "Are Banks ready to weather rising interest rates" December 2022

<sup>3</sup> European Banking Outlook "2023 EU-Wide Stress Test Methodological Note" July 2022

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